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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/611,953

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Moon-Cheol Kim

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STAAS & HALSEY LLP

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EXAMINER

REKSTAD, ERICK J

ART UNIT

PAPER NUMBER

2621

MAIL DATE

DELIVERY MODE

10/29/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/611,953

Applicant(s)

KIM, MOON-CHEOL

Examiner

Erick Rekstad

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 01 July 0813.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-7 and 18 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-7 and 18 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____.

- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____.

DETAILED ACTION

This is a Final Rejection for Application no. 10/611,953 in response to the amendment filed on August 13, 2007.

Response to Arguments

Applicant's arguments filed August 13, 2007 have been fully considered but they are not persuasive.

The Applicant argues the rejection of claims 1 and 5 in view of the prior art reference US Patent 5,801,765 to Gotoh et al. Specifically the Applicant has argued that Gotoh does not disclose "first and second histogram detection units computing histograms from input first and second color signals" and "a cross correlation coefficient calculation unit calculating a correlation value between the first and second histograms computed by the first and second histogram detection units".

The Examiner respectfully disagrees. As noted in the previous Office Action, the claim does not require the first and second histogram detection units to be separate distinct units. Therefore, the apparatus of Figure 10 shows a first histogram detection unit (102) with the switch (103) set to the top storage (104) and a second histogram detection unit (102) with the switch (103) set to the bottom storage (104). Further, it is viewed by the Examiner that providing two distinct histogram detection units would be an obvious variation of Gotoh. The Applicant has failed to provide a clear reason as to why the histogram differential sum operation means (106) does not satisfy the requirements for a cross correlation coefficient calculation unit. The histogram differential sum operation means gives the sum of absolute difference between the two

histograms (Col 2 Lines 5-8), which is viewed by the Examiner to be a cross correlation value.

With respect to claim 5, the Applicant argues that Gotoh does not teach the steps required by the claim. The Applicant's citation of Gotoh fails to include the full citation by the Examiner. Gotoh teaches "Brightness information for each pixel is quantized up to a prescribed level, and a brightness histogram for one frame is made by a histogram creation means 102". Gotoh further teaches this process is performed again for each frame processing (Col 1 Lines 60-65). Therefore, Gotoh teaches the quantizing of the two frame signals.

The Applicant argues the rejection of claims 1-7, 17 and 18 in view of the prior art reference US Patent 5,719,643 to Nakajima. Specifically the Applicant argues that Nakajima fails to disclose "a cross correlation coefficient calculation unit calculating a correlation value between the first and second histograms of the first and second frame color signals computed by the first and second histogram detection units".

The Examiner respectfully disagrees. As previously cited, Nakajima teaches the cross correlation coefficient calculation unit (8 of Figure 2) (Col 4 Lines 23-27). The cross correlation coefficient calculation unit performs the operation to obtain the correlation value p (Col 6 Lines 31-65).

The Applicant further argues that Nakajima does not teach the converting of the image frame data into the required color signals. As shown in Figure 2, the processing units (3 and 4) convert the image frame data into color signals (contracted image of chrominance signals (A and B) and Contracted Image of Luminance Signals (Input to

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Inter-Frame Difference Unit 5)). As shown above, the chrominance signals (A and B) are used by the Chrominance Histogram Correlation Unit (8).

The Applicant further argues the rejection of claims 3 and 4. Specifically, the Applicant argues that Nakajima discloses a scene change detector using both luminance signal and chrominance signal but fails to disclose a scene change detector using either luminance signal or chrominance signal.

The Examiner respectfully disagrees. Claims 3 and 4 do not require either the scene change detector using either luminance signal or chrominance signal. As shown above, the signal received by Nakajima contains both luminance and chrominance values. The contracted image processing unit then divides the signal into the luminance component and chrominance component. Therefore, Nakajima satisfies the requirements of claims 3 and 4 because the claims do not preclude the use of a signal containing both luminance and chrominance components.

The Applicant further argues that Nakajima fails to teach the requirements of claim 5. The Examiner respectfully disagrees. From the citation provided by the Applicant, Nakajima teaches an equivalent operation to that of the Applicant (Spec. Page 8 Paragraph [0036]). Therefore it is viewed by the Examiner that Nakajima teaches the requirements of claim 5.

The Applicant argues the rejection of claim 17 in view of Nakajima. Claim 17 has been canceled and incorporated into claim 18. The Examiner disagrees with the Applicant for the same reasons as stated above for claim 1.

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The Applicant argues the rejection of claims 6, 17 and 18 in view of Gotoh and US Patent 6,995,805 to Park. The Examiner respectfully disagrees with the Applicant. In response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, Park teaches a means for determining scene changes while reducing false detections (Col 1 Lines 58-66, Col 2 Lines 13-39). Thus, the method of Park is an improvement on the prior art scene change detection apparatus taught by Figure 10 of Gotoh.

The Applicant further argues that Gotoh does not teach, "storing two image frame data separately to detect the scene change; and converting the stored two frame data into the first and second color signals." The Examiner points to Column 9 Lines 50-55, where Gotoh specifically teaches obtaining the brightness information in order to calculate the histogram. Further, as noted in the previous Office Action the frames are stored at different times and therefore are stored separately.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 2-5 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 2 and 5 recites the limitation "color signals" in claim 1. There is insufficient antecedent basis for this limitation in the claim. As amended, claim 1 now requires a "frame color signal".

Claims 3 and 4 are rejected as being dependent on rejected claim 2 and therefore are rejected for the same reason.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1 and 5 are rejected under 35 U.S.C. 102(b) as being anticipated by US Patent 5,801,765 to Gotoh et al.

[claim 1]

As shown in Figure 10, Gotoh teaches the prior art histogram based scene change detector. The detector comprises a first and second histogram detection units (102) computing histograms from input first and second color signals respectively. Note: the claim does not require the first and second histogram detection units to be separate distinct units therefore, the apparatus of Figure 10 shows a first histogram detection unit

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(102) with the switch (103) set to the top storage (104) and a second histogram detection unit (102) with the switch (103) set to the bottom storage (104).

Gotoh further teaches a cross correlation coefficient calculation unit (105 and 106) calculating a correlation value between the first and second histograms computed by the first and second histogram detection units, respectively; and a decision unit outputting a scene change signal by comparing the correlation value with a threshold (107) (Col 1 Line 53-Col 2 Line 14).

[claim 5]

Gotoh teaches the histogram detection units quantize the input first and second color signals to signal bands, respectively, each calculated the number of pixels having the same values of the quantized first and second color signals with respect to all pixels in a predetermined frame region, and calculate the first and second histograms by standardizing the calculated respective numbers, respectively (Col 1 Lines 58-60).

Claims 1-7 and 18 are rejected under 35 U.S.C. 102(b) as being anticipated by US Patent 5,719,643 to Nakajima.

[claims 1 and 2]

As shown in Figure 2, Nakajima teaches the use of a first and second frame buffers (1 and 2) storing two image frame data, respectively, to detect a scene change; and a first and second color space conversion units (3 and 4) converting the image frame data stored in the first and second frame buffers into the first and second color signals to be outputted to the first and second histogram detection units ($H_{n,j,k}$ and $H_{n-1,j,k}$

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of Chrominance Histogram Correlation Unit) (Col 3 Line 66-Col 4 Line 7, Col 4 Lines 19-27, Col 6 Lines 55-65).

A first and second histogram detection units ($H_{n,j,k}$ and $H_{n-1,j,k}$) computing histograms from input first and second color signals, respectively;

A cross correlation coefficient calculation unit (8, Fig. 2) calculating a correlation value between the first and second histograms computed by the first and second histogram detection units (Col 6 Lines 55-65), respectively; and

A decision unit outputting a scene change signal by comparing the correlation value with a threshold (Col 6 Line 66-Col 7 Line 4, Fig. 7).

[claims 3 and 4]

Nakajima teaches the color signals are luminance and chroma signals (Col 4 Lines 4-7).

[claim 5]

Nakajima teaches the histogram detection units quantize the input first and second color signals to signal bands, respectively, each calculated the number of pixels having the same values of the quantized first and second color signals with respect to all pixels in a predetermined frame region, and calculate the first and second histograms by standardizing the calculated respective numbers, respectively (Col 6 Lines 31-54, Fig. 6).

[claim 6]

Nakajima further teaches the decision unit outputs the scene change signal when the correlation value (ρ) is less than the threshold (δ) (Col 7 Lines 11-17, Fig. 7).

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[claim 7]

Nakajima teaches the threshold(δ) value is 0.9 (Col 7 Line 40-44).

[claim 18]

As shown above for claims 1 and 2, Nakajima teaches the storing two image frame data separately to detect the scene change (1 and 2, Fig. 2); and converting the stored two frame data into the first and second color signals (A and B, Fig. 2);

Computing first and second histograms ($H_{n,j,k}$ and $H_{n-1,j,k}$ of Chrominance Histogram Correlation Unit) with respect to input first and second color signals respectively;

Calculating a correlation value between the first and second histograms(p); and

Outputting a scene change signal when the correlation value is less than a threshold (δ) (Col 3 Line 66-Col 4 Line 7, Col 4 Lines 19-27, Col 6 Line 55-Col 7 Line 4, Col 7 Lines 11-17, Figs. 2 and 7).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 6 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gotoh in view of US Patent 6,995,805 to Park.

[claim 6]

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As shown above for claim 1, Gotoh teaches a scene change detector (Fig. 10). Gotoh teaches the use of detecting a scene change when a correlation value is higher than a threshold (Col 2 Lines 9-14). Gotoh is silent on the detecting a scene change when a correlation value is lower than a threshold.

As shown in Figure 6, Park teaches a scene change detector using histograms wherein the scene change is detected when a correlation value is higher than a threshold (TA and TC) and lower than a threshold (TB) (Col 6 Lines 47-67, Col 7 Line 32-46, Col 7 Line 62-Col 8 Line 24, Figs. 5 and 6). It would have been obvious to one of ordinary skill in the art at the time of the invention to use the scene change detection method of Park with the scene change detector of Gotoh in order to automatically detect scene changes while reducing false detections as taught by Park (Col 1 Lines 58-66, Col 2 Lines 13-39).

[claim 18]

As shown in Figure 5, Gotoh teaches the storing two image frame data separately to detect the scene change (2, Fig. 5). Note: the frames are stored at different times and therefore are stored separately. Gotoh further teaches converting the stored two frame data into the first and second color signals (2 and 3, Fig. 5);

Computing first and second histograms (3, 5 and 6) with respect to input first and second color signals respectively;

Calculating a correlation value between the first and second histograms (7); and

Outputting a scene change signal using the correlation value (10) (Col 9 Line 50-Col 10 Line 2, Col 10 Lines 25-31). Gotoh is silent on the detecting a scene change when a correlation value is lower than a threshold.

As shown in Figure 6, Park teaches a scene change detector using histograms wherein the scene change is detected when a correlation value is higher than a threshold (TA and TC) and lower than a threshold (TB) (Col 6 Lines 47-67, Col 7 Line 32-46, Col 7 Line 62-Col 8 Line 24, Figs. 5 and 6). It would have been obvious to one of ordinary skill in the art at the time of the invention to use the scene change detection method of Park with the scene change detector of Gotoh in order to automatically detect scene changes while reducing false detections as taught by Park (Col 1 Lines 58-66, Col 2 Lines 13-39).

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of


the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Erick Rekstad whose telephone number is 571-272-7338. The examiner can normally be reached on 8-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mehrdad Dastouri can be reached on 571-272-7418. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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